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STATUS REVIEW OF

Phlox kelseyi var. missoulensis

U.S.D.A. FOREST SERVICE - REGION 1

LEWIS AND CLARK NATIONAL FOREST

MONTANA

prepared by

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TABLE OF CONTENTS

		PAGE
	SUMMARY.	ii
I.	SPECIES INFORMATION	
	A. CLASSIFICATION.	1
	B. PRESENT LEGAL OR OTHER FORMAL STATUS.	2
	C. DESCRIPTION	2
	D. GEOGRAPHICAL DESCRIPTION, ...	3
	E. HABITAT	4
	F. POPULATION DEMOGRAPHY AND BIOLOGY	7
	G. POPULATION ECOLOGY.	8
	H. LAND OWNERSHIP.	8
II.	ASSESSMENT AND MANAGEMENT RECOMMENDATIONS	
	A. THREATS TO CURRENTLY KNOWN POPULATIONS.	9
	B. MANAGEMENT PRACTICES AND RESPONSE	9
	C. RECOMMENDATIONS FOR MAINTAINING VIABLE POPULATIONS. .	9
	D. RECOMMENDATIONS FOR FURTHER ASSESSMENT.	10
III.	LITERATURE CITED	11
IV.	ELEMENT OCCURRENCE PRINT-OUTS AND MAPS	12
V.	PHOTOGRAPHS.	33

SUMMARY

Phlox kelseyi var. missoulensis is endemic to a limited portion of central and western Montana. It is currently known from eight locations ranging from Missoula to the Little Belt Mountains. The plant is on the Watch List for Region 1 of the U.S. Forest Service, and is categorized as 3C under the Endangered Species Act.

The var. missoulensis is differentiated from the typical variety (var. kelseyi), which also occurs in central and western Montana, by its more rigid stems and by growing on dry, gravelly slopes and ridge crests. Phlox kelseyi var. kelseyi has more or less succulent stems and occurs in moist, alkaline meadows. There is some controversy about the taxonomic status of var. missoulensis, and additional studies are needed. Phlox kelseyi var. missoulensis occurs over a wide altitudinal range, predominantly at 3600-6900 feet (1090-2100 m). Flowering occurs from May through July, and pollination is likely by noctuid moths. Populations are generally between a few tens of plants to several thousand.

Seven populations of Phlox kelseyi var. missoulensis occur on Forest Service lands; Deerlodge (2), Helena (2), and Lewis and Clark (3) National Forests. The other three are on privately owned land. Grazing by domestic livestock is not known to pose any current threat to local populations, although trampling could affect smaller populations in particular. The population at Waterworks Hill was threatened in the past by urban development, but this is not a current threat.

Management planning should take all Montana sites into consideration in order to maintain viable populations on U.S. Forest Service, Region 1 lands. Field surveys should be continued in areas of suitable habitat for new populations. Additional studies are needed on the systematics of Phlox kelseyi var. missoulensis, its variation, and relation to other Phlox taxa in the area.

I. SPECIES INFORMATION

A. CLASSIFICATION

1. **SCIENTIFIC NAME:** Phlox kelseyi Britton var. missoulensis (Wherry) Cronquist.

2. **COMMON NAME:** Missoula phlox.

3. **FAMILY:** Polemoniaceae (Phlox Family).

4. **GENUS:** The genus Phlox occurs in North America and northern Asia, and contains about 60 species (Hitchcock et al. 1959). In Montana, there are 11 native species (Dorn 1984).

5. **SPECIES:** Phlox kelseyi var. missoulensis is endemic to western and central Montana and is currently known from Missoula, Granite, Powell, Lewis and Clark, Cascade,Judith Basin, Beaverhead, and Meagher counties. The variety missoulensis was originally described as a distinct species in 1944 (Wherry 1944), and was reduced to a variety of P. kelseyi in 1959 (Hitchcock et al. 1959). The species also contains the typical variety, var. kelseyi, which occurs from western and central Montana, to central Colorado and south-central Idaho. Some authors recognize var. salina, which occurs in northeastern Nevada (Cronquist et al. 1984). The var. kelseyi is more or less succulent, and occurs in moist, alkaline meadows, while var. missoulensis is stiffer and generally grows on drier, open slopes.

   There is some question about the taxonomic status of var. missoulensis. Cronquist (Hitchcock et al. 1959) reduced Phlox missoulensis Wherry to a variety of Phlox kelseyi. Wherry (1966) disagreed with this, maintaining that "they differ completely in indument and in numerous morphologic details." Wherry further suggested that P. missoulensis was closer to P. douglasii (now known as P. caespitosa) and that if any reduction were required it should be as a variety of P. douglasii. Also, small-leaved plants of Phlox kelseyi var. missoulensis come close to larger-leaved specimens of P. pulvinata, and can be hard to distinguish. In a more recent, unfinished study of Phlox kelseyi, Campbell (1991) concluded that Phlox kelseyi var. missoulensis is a valid taxon and that it "comprises a few sensitive,

isolated populations that occur only in western Montana."

A number of specimens documenting sites were annotated by Lisa Campbell during her work on the species as a graduate student at the University of Montana; her study was never completed. Specimens collected during the 1990 field season that document locations contained in this report, were sent for identification to Dr. Dieter Wilken, a specialist in the family Polemoniaceae (Phlox Family). He reviewed the specimens, but did not feel he had enough knowledge of this complex of species to annotate the specimens. It was his feeling that a full systematic study was needed for the genus Phlox. Until a more informed opinion can be had, the specimens and the sites will remain as currently labeled.

B. PRESENT LEGAL OR OTHER FORMAL STATUS

1. **FEDERAL STATUS:** Phlox kelseyi var. missoulensis is on the Watch List for Region 1 of the U.S. Forest Service. Under the Endangered Species Act, administered by the U.S. Fish and Wildlife Service, it is categorized as 3C ("taxa that have proven to be more abundant or widespread than was previously believed, and/or those that are not subject to any identifiable threat").

2. **STATE:** Phlox kelseyi var. missoulensis has most recently been ranked by the Montana Natural Heritage Program (Shelly 1990) as an S2 species ("imperiled in Montana because of rarity", 6-20 occurrences).

C. DESCRIPTION

1. **GENERAL NON-TECHNICAL DESCRIPTION:** Phlox kelseyi var. missoulensis is a small perennial plant up to 4 inches tall, with stems that grow in a crowded tuft from a taproot. The leaves are linear to linear-lanceolate, usually 0.4-1.0 inch long or a bit shorter, and 0.04-0.10 inch wide near the middle. The leaf surfaces vary from hairless to spreading hairy, and sometimes have small glands. The leaf margins are thickened but not whitish, and are hairy, at least towards the base. The inflorescences contain 1-5, light blue to white flowers, which are solitary at the branch ends.

The flower tube is 0.4-0.5 inch long, as long or longer than the calyx. The calyx is 0.3-0.4 inch long, with the tissue between the ribs flattened. The styles of the pistil are 0.16-0.30 inch long.

2. **TECHNICAL DESCRIPTION:** Plant a caespitose, taprooted perennial with numerous stems up to 1 dm tall, closely crowded and suberect, glabrous to spreading-hirsute and sometimes glandular; leaves linear to linear-lanceolate with a subacerose tip, mostly 1-2.5 cm long, or some a little shorter, 1-2.5 mm wide near the middle, surfaces glabrous to hairy or glandular, the margins thickened but not whitish, ciliate at least toward the base; inflorescence 1-5 flowered; flowers short-pedicellate (2-8 mm) or sessile, solitary at the end of the stems; sepals 7-11 mm, united 3/8 to 1/2 their length, cuspidate, lobes flattened with prominent or inconspicuous midrib, intercostal membranes flattened; corolla light blue to white, tube 10-13 mm long equalling or exceeding the calyx, lobes 6-9 mm; styles 4-7.5 mm (adapted from Hitchcock et al. 1959, Booth and Wright 1966, and Wherry 1955).

3. **LOCAL FIELD CHARACTERS:** Phlox kelseyi var. missoulensis is distinguished from the typical variety Phlox kelseyi var. kelseyi by its more rigid stems, and by growing on dry, open slopes while var. kelseyi has more or less succulent stems and occurs in moist, alkaline meadows. Small-leaved plants of Phlox kelseyi var. missoulensis may be hard to distinguish from larger-leaved specimens of P. pulvinata, since there can be overlap between P. pulvinata vs. P. kelseyi var. missoulensis in style length (2-5 mm vs. 4-7.5 mm) and leaf length (0.5-1.2 but occasionally to 1.5 cm vs. 1-2.5 cm). Current identification keys are in Hitchcock et al. (1959) and Dorn (1984). Photographs (pp. 33-37) illustrate the flower, habit and habitat of P. kelseyi var. missoulensis.

D. GEOGRAPHICAL DISTRIBUTION

1. **RANGE:** Phlox kelseyi var. missoulensis occurs only in Montana and ranges from Waterworks Hill in Missoula to the Little Belt Mountains.

2. **CURRENT SITES:** Phlox kelseyi var. missoulensis is currently known from ten locations in Montana, 7

west of the Continental Divide, and three in Little Belt Mountains of central Montana, Fig. 1, p. 5. Details of each occurrence and exact locations as mapped on U.S.G.S. topographic maps are in Section IV, element occurrence print-outs and maps pp. 12-22.

3. **HISTORICAL SITES:** None.

4. **UNVERIFIED/UNDOCUMENTED SITES:** None.

5. **AREAS SURVEYED BUT SPECIES NOT LOCATED:** The survey emphasized relocating and mapping known locations, although several new areas were searched without result. The following areas in Cascade County were searched in 1990, but Phlox kelseyi var. missoulensis was not located at these sites: portions of T14N R7E, Section 3, SW4 (Keegan Peak), and Section 15, NE4 (Belt Park Butte).

E. **HABITAT:** Phlox kelseyi var. missoulensis occurs in habitats that range from sparsely vegetated with dry gravelly slopes, to heavily vegetated forb meadow sites. Most sites are on windswept ridge crests on all aspects.

1. **ASSOCIATED VEGETATION:** Phlox kelseyi var. missoulensis populations occur in sparse grassland and forb communities ranging from dry gravelly slopes and heavily grazed pastures, to higher elevation krummholz communities. Associated native species include:

Achillea millefolium (yarrow)
Agropyron spicatum (bluebunch wheatgrass)
Allium cernuum (nodding onion)
Anemone cylindrica (long-headed anemone)
Antennaria umbrinella (umber pussytoes)
Arenaria congesta (ballhead sandwort)
Aster scopulorum (crag aster)
Astragalus vexilliflexus (bent-flowered milkvetch)
Besseya wyomingensis (Wyoming besseya)
Cerastium arvense (field chickweed
Chrysopsis villosa (hairy golden-aster)
Claytonia lanceolata var. flava (yellow springbeauty)
Cryptantha celosioides (cockscomb cryptantha)
Delphinium bicolor (little larkspur)
Dodecatheon pulchellum (few-flowered shooting star)

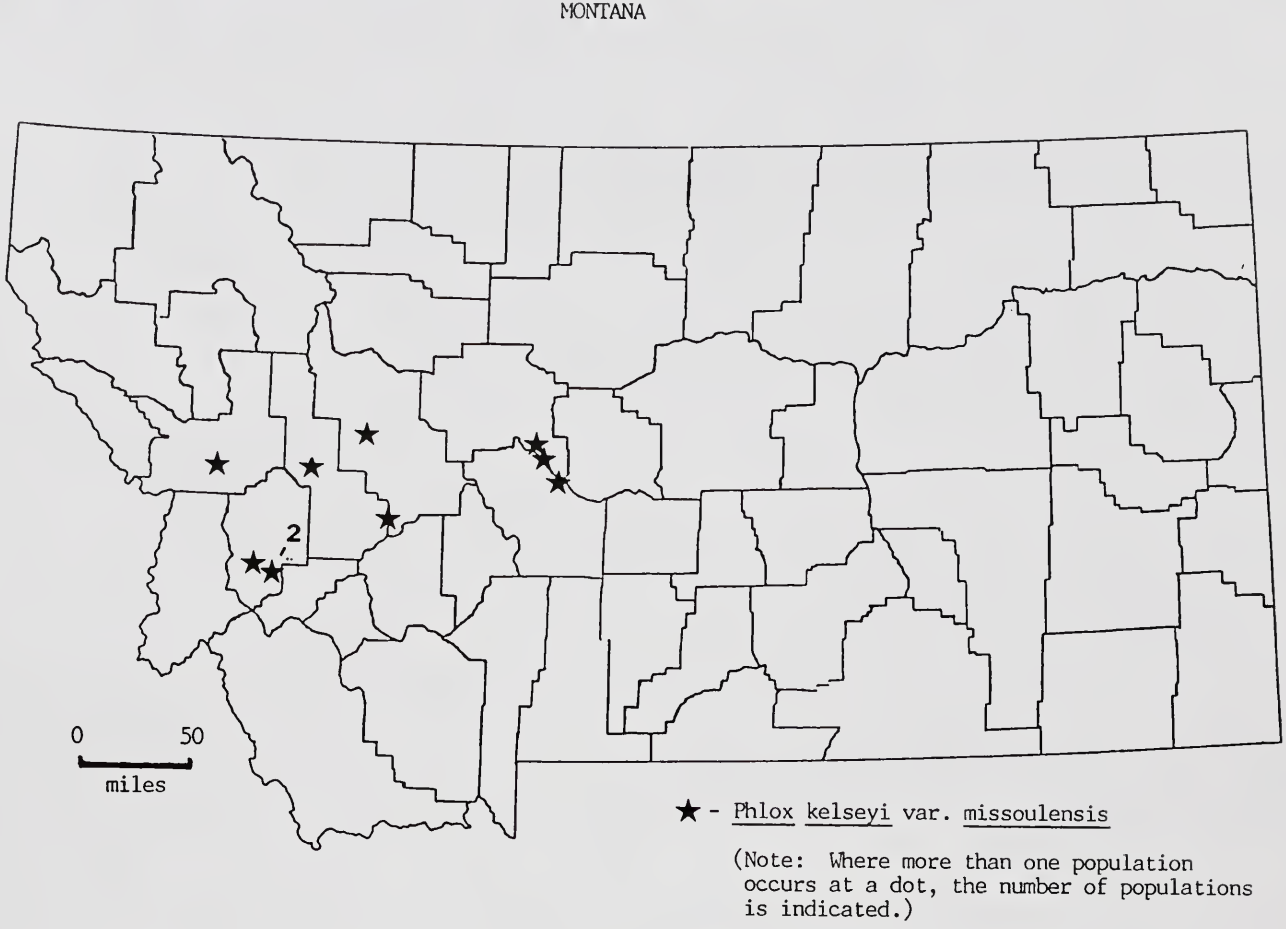

Figure 1. Distribution of Phlox kelseyi var. missoulensis populations in Montana.

Douglasia montana (Rocky Mountain douglasia)
Erigeron compositus (cut-leaved daisy)
Eriogonum flavum (yellow buckwheat)
Eriogonum ovalifolium (oval-leaved eriogonum)
Festuca idahoensis (Idaho fescue)
Festuca scabrella (rough fescue)
Geum triflorum (old man's whiskers)
Gilia spicata (spicate gilia)
Lesquerella paysonii (Payson's bladderpod)
Lewisia rediviva (bitterroot)
Linum perenne (blue flax)
Lomatium cous (Cous biscuit-root)
Microseris nigrescens (black-hairy microseris)
Oxytropis sericea (silky crazyweed)
Penstemon eriantherus (fuzzytongue penstemon)
Penstemon procerus (small-flowered penstemon)
Phlox pulvinata (cushion phlox)
Poa secunda (Sandberg's bluegrass)
Polygonum bistortoides (American bistort)
Potentilla diversifolia (diverse-leaved cinquefoil)
Sedum stenopetalum (wormleaf stonecrop)
Selaginella densa (compact selaginella)
Senecio canus (wooly groundsel)
Townsendia parryi (Parry's townsendia)

2. **TOPOGRAPHY:** Phlox kelseyi var. missoulensis occurs over a wide altitudinal range, predominantly from 3600-6900 feet (1090-2100 m) in elevation, with the highest site at 7540 feet (2290 m). It occurs commonly on slopes and ridge crests, with various aspects.

3. **SOIL RELATIONSHIPS:** The soils under Phlox kelseyi var. missoulensis populations are developed on a wide variety of parent materials. Several populations (Emerine Gulch (001) and Kings Hill (006)) occur in calcareous soils. Site-specific soil information is not available for each known location. However, the sites are usually rocky or gravelly, and moist to dry, with weakly developed soils, probably Entisols in most cases.

4. **REGIONAL CLIMATE:** The regional climate within the range of Phlox kelseyi var. missoulensis in western and central Montana is characterized by hot, dry summers and cold, snowy winters. The precipitation peak is generally as rain in May and June (U.S. Department of Commerce 1982).

The climatic station closest to the central Montana sites is at Stanford, which at 4710 feet

(1435 m) is 1000-2000 feet (300-600 m) lower than most of the sites in the Little Belt Mountains. For the period 1951-1980 (U.S. Department of Commerce 1982), the January mean temperature was 20.5°F (-6.4°C), the July mean temperature was 65.2°F (18.6°C), and the annual mean temperature was 44.2°F (6.8°C). The mean annual precipitation was 15.34 inches (38.9 cm), with May (3.01 in) (7.6 cm) and June (3.07 in) (7.8 cm) being the wettest months.

The Missoula climatic station is at 3190 feet (972 m), about 400 feet (120 m) lower than the Waterworks Hill site, which is the lowest known occurrence of Phlox kelseyi var. missoulensis. For the period 1951-1980 (U.S. Department of Commerce 1982), the January mean temperature was 21.3°F (-5.9°C), the July mean temperature was 67.2°F (19.7°C), and the annual mean temperature was 44.1°F (6.7°C). The mean annual precipitation was 13.29 inches (33.7 cm), with May (1.62 in) (4.1 cm) and June (1.85 in) (4.7 cm) being the wettest months.

F. POPULATION DEMOGRAPHY AND BIOLOGY

1. **PHENOLOGY:** Flowering generally occurs from May through July, with earlier flowering dates at lower elevation sites.

2. **POPULATION SIZE AND CONDITION:** Population sizes range from a few plants to 10,000 plants.

3. **REPRODUCTIVE BIOLOGY**

   a. **TYPE OF REPRODUCTION:** The flowers of Phlox kelseyi var. missoulensis are perfect, and probably protandrous and cross-fertilizing, since most Phlox species are (Grant and Grant 1965). Campbell (1991) felt this slow growing perennial had a low recruitment rate.

   b. **POLLINATION BIOLOGY:** Pollination mechanisms have not been studied for Phlox kelseyi var. missoulensis. However, its pollination biology can be inferred from information on other similar Phlox species. The corolla is salverform and the stamens are inserted at different levels in the corolla tube. The stigma and anthers are well within the corolla tube, and the corolla tube is 1.0-1.3

cm long. These characteristics are consistent with tongue-tip pollination involving noctuid moths (Grant and Grant 1965).

c. **SEED DISPERSAL AND BIOLOGY:** Each flower produces a capsule with three locules, and generally 1 (2-4) seeds per locule. The seeds do not become mucilaginous when moistened as in some other genera of the Phlox Family. Thus, there appear to be no special adaptations for seed dispersal and nothing is known of the seed biology.

G. POPULATION ECOLOGY

1. BIOLOGICAL INTERACTIONS

a. **COMPETITION:** No studies have been done on competitive interactions, either intraspecific or interspecific. However, the frequent occurrence of Phlox kelseyi var. missoulensis in open, unshaded areas suggests that it is not very tolerant of competition from other plants, especially for light, and would not do well in communities with overtopping vegetation.

H. LAND OWNERSHIP

1. Seven of the ten occurrences of Phlox kelseyi var. missoulensis in Montana are on land managed by the U.S. Forest Service. The other three occurrences are on privately owned land. Specific information for each occurrence is given below and exact locations are listed in Section IV, pp. 12-22.

a. **U.S.D.A. Forest Service**

Deerlodge N.F.

Philipsburg Ranger District

Emerine Gulch (001)
Georgetown Lake Ridge (010)

Helena N.F.

Helena Ranger District

Macdonald Pass (004)

Lincoln Ranger District

Lewis and Clark Pass (005)

Lewis and Clark National Forest

Kings Hill Ranger District

Harley Park (007)
Kings Hill (006) portion
Upper Wilson Park (009)

Judith Ranger District
Kings Hill (006) portion

b. Privately Owned

Manley Ranch (008)
Rough Fescue Ridge (003)
Waterworks Hill (002)

II. ASSESSMENT AND MANAGEMENT RECOMMENDATIONS

A. THREATS TO CURRENTLY KNOWN POPULATIONS

1. **GRAZING:** Grazing by domestic livestock is not known to pose any current threat to Phlox kelseyi var. missoulensis populations. The plants themselves are likely unpalatable because of their woodiness and hard, pointed leaves. However, trampling associated with heavy grazing could affect this species.

2. **URBAN DEVELOPMENT:** The population at Waterworks Hill (002) was threatened by an urban development proposal in the recent past, but this is not a threat currently.

B. MANAGEMENT PRACTICES AND RESPONSE: No information is available on responses to specific management actions. However, Phlox kelseyi var. missoulensis seems to be able to occupy disturbed sites such as old roads (004) and heavily grazed pastures (008).

C. RECOMMENDATIONS FOR MAINTAINING VIABLE POPULATIONS: The following recommendations are made to ensure that the long-term viability of Phlox kelseyi var.

missoulensis populations is maintained on U.S. Forest Service land in Montana.

1. Protection of natural habitats that currently support Phlox kelseyi var. missoulensis populations. Management plans on the Lewis and Clark National Forest and the Helena National Forest should take all known populations into consideration and prevent disturbance of the sites.

2. Notification of U.S. Forest Service personnel of sites on U.S. Forest Service lands. To prevent inadvertent impacts on currently known sites, personnel involved in planning activities should be provided with detailed information on the locations of Phlox kelseyi var. missoulensis populations. It is especially important that timber sale managers, engineers, and range conservationists at the Ranger District level know these locations so that disturbance can be prevented.

D. RECOMMENDATIONS FOR FURTHER ASSESSMENT

1. Further field surveys of potential habitats. Additional field surveys should be made in central Montana to locate and delineate populations of Phlox kelseyi var. missoulensis.

2. Establishment of monitoring studies to assess population condition and status. Monitoring studies should be established at several locations to better determine population dynamics and the effects of habitat modification on Phlox kelseyi var. missoulensis. The methods outlined in Lesica (1987) are suitable for monitoring some aspects of these populations and can be combined with other techniques such as ECODATA plots.

3. Further systematic studies: Additional studies are needed on the systematics of Phlox kelseyi var. missoulensis, its variation and its relationship to other Phlox taxa in the area. Specimens collected in 1990 will be sent to Dr. Arthur Cronquist (New York Botanical Garden) for review.

III. LITERATURE CITED

Booth, W.E. and J.C. Wright. 1966. Flora of Montana, part II. Montana State University, Bozeman. 305 pp.

Campbell, L.M. 1991. letter of 12 March 1991 to P. Achuff, Montana Natural Heritage Program, Helena.

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Grant, V. and K.A. Grant. 1965. Flower pollination in the Phlox Family. Columbia University Press, New York. 180 pp.

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IV. ELEMENT OCCURRENCE PRINT-OUTS AND MAPS

ELEMENT OCCURRENCE RECORD
Phlox kelseyi var. missoulensis

Occurrence number: 001

Global rank: G4T2Q Forest Service status: WATCH LIST
State rank: S2 Federal Status: 3C

Survey site name: EMERINE GULCH
EO rank:
EO rank comments:

County: GRANITE

USGS quadrangle: MAUKEY GULCH

Township-range: 006N016W Section: 35 Precision: S
Township-range comments: NW4

Survey date: 1972-05-24 Elevation: 5600
First observation: 1972 Slope/aspect:
Last observation: 1972-05-24 Size (acres): 0

Location:
TAKE HWY. 38 CA. 15 MI. FROM HWY. 10A TO JCT. WITH ROCK CREEK RD.; PROCEED W. ON 38 CA. 2.25 MI. TO EMERINE GULCH RD.; SITE IS ON HILL ABOVE ROAD.

Element occurrence data:
101-1000 INDIVIDUALS; SITE IS IMPACTED BY GRAZING.

General site description:
STEEP, SW-FACING HILLSIDE, OCCASIONALLY SLUMPING CLAY-GRAVEL SOIL; WITH AGROPYRON SPICATUM (DOMINANT), DELPHINIUM BICOLOR, ERIOGONUM FLAVUM, LESQUERELLA PAYSONII.

Land owner/manager:
DEERLODGE NATIONAL FOREST, PHILIPSBURG RANGER DISTRICT

Comments:
VOUCHERS - LACKSCHEWITZ, K. (3502), 1972 (MONTU); LESICA, P. (3752), 1986, SPECIMEN # 108469 (MONTU). STATE ENDEMIC; SEE GMF FOR SITE SUMMARY AND MAP. LIKELY SITE OF HARVEY 1965 COLLECTION.

Information source:
LACKSCHEWITZ, KLAUS. DIVISION OF BIOLOGICAL SCIENCES, UNIV. OF MONTANA, MISSOULA, MT 59812.

ELEMENT OCCURRENCE RECORD
Phlox kelseyi var. missoulensis

Occurrence number: 002

Global rank: G4T2Q Forest Service status: WATCH LIST
State rank: S2 Federal Status: 3C

Survey site name: WATERWORKS HILL
EO rank:
EO rank comments:

County: MISSOULA

USGS quadrangle: NORTHEAST MISSOULA

Township-range: 013N019W Section: 15 Precision: S
Township-range comments: SW4SE4

Survey date: 1979-05-09 Elevation: 3600
First observation: 1921 Slope/aspect:
Last observation: 1979-05-09 Size (acres): 15

Location:
WATERWORKS HILL, NEAR N. CITY LIMITS OF MISSOULA.

Element occurrence data:
ABUNDANT; THIS AREA HAS PREVIOUSLY BEEN THREATENED BY DEVELOPMENT.

General site description:
ON CREST OF RIDGE IN OPEN CUSHION PLANT COMMUNITY; WITH SENECIO CANUS, DOUGLASIA MONTANA, ERIOGONUM OVALIFOLIUM, LEWISIA REDIVIVA, ERIGERON COMPOSITUS, PENSTEMON ERIANTHERUS, CHRYSOPSIS VILLOSA, AND CRYPTANTHA CELOSIOIDES.

Land owner/manager:
PRIVATELY OWNED LAND (INDIVIDUAL OR CORPORATE)

Comments:
NUMEROUS VOUCHER SPECIMENS HOUSED AT MONTU; STATE ENDEMIC.

Information source:
LESICA, P., AND S. MOLINA. 1985. AN INVENTORY OF SIGNIFICANT BOTANICAL FEATURES ALONG MT RIVERS. PNW RIVERS STUDY. 54 PP.

ELEMENT OCCURRENCE RECORD
Phlox kelseyi var. missoulensis

Occurrence number: 003

Global rank: G4T2Q Forest Service status: WATCH LIST
State rank: S2 Federal Status: 3C

Survey site name: ROUGH FESCUE RIDGE
EO rank:
EO rank comments:

County: GRANITE

USGS quadrangle: GEORGETOWN LAKE

Township-range: 005N014W Section: 33 Precision: M
Township-range comments: E2

Survey date: 1977-06-14 Elevation: 7500
First observation: 1977 Slope/aspect:
Last observation: 1977-06-14 Size (acres): 0

Location:
RIDGE BETWEEN GEORGETOWN LAKE AND EAST FORK RESERVOIR, CA. 2.1 AIR MI SSW OF THE SW CORNER OF GEORGETOWN LAKE.

Element occurrence data:
SEVERAL LARGE COLONIES; WHEN MAPPED IN LEGAL GIVEN IN BPA RIVERS STUDY, SITE IS LOCATED AT A LOWER ELEVATION (CA. 6900') THAN THAT GIVEN ON COLLECTION LABEL.

General site description:
ON THE CREST OF A RIDGE.

Land owner/manager:
PRIVATELY OWNED LAND (INDIVIDUAL OR CORPORATE)

Comments:
VOUCHER-LACKSCHEWITZ, K. (7320), 1977, MONTU; STATE ENDEMIC.

Information source:
LESICA, P., AND S. MOLINA. 1985. AN INVENTORY OF SIGNIFICANT BOTANICAL FEATURES ALONG MT RIVERS. PNW RIVERS STUDY. 54 PP.

ELEMENT OCCURRENCE RECORD
Phlox kelseyi var. missoulensis

Occurrence number: 004

Global rank: G4T2Q Forest Service status: WATCH LIST
State rank: S2 Federal Status: 3C

Survey site name: MACDONALD PASS
EO rank:
EO rank comments:

County: POWELL
LEWIS AND CLARK

USGS quadrangle: MACDONALD PASS

Township-range: 009N006W Section: 02 Precision: S
Township-range comments: SE4,NE4NW4,11NE4,NW4SE4,T10NR6W:35SW4SE4,SE4SW4

Survey date:
First observation: 1976
Last observation: 1990-06-25

Elevation: 6400
Slope/aspect:
Size (acres): 0

Location:
NEAR MICROWAVE INSTALLATION, SOUTHWEST OF MACDONALD PASS, SOUTH OF HWY. 12. SITE IS VERY NEAR THE POWELL-LEWIS AND CLARK COUNTY LINE, AS WELL AS THE CONTINENTAL DIVIDE.

Element occurrence data:
30 JUNE 1976: "FEW PLANTS;" 30 PLANTS IN FLOWER, SOME SEEDLINGS. 20 JUNE 1990: INTERBREEDING OCCURRING BETWEEN PHLOX KELSEYI VAR. MISSOULENSIS AND P. PULVINATA. 25 JUNE 1990: 3,000-5,000 PLANTS IN 3 SUBPOPULATIONS; ID QUESTIONABLE.

General site description:
ABANDONED ROADWAY; GRANITIC, ROCKY KNOLLS, SANDY LOAM. FESTUCA SCABRELLA/FESTUCA IDAHOENSIS COMMUNITY, WITH PHLOX PULVINATA, BESSEYA WYOMINGENSIS, ANTENNARIA UMBRINELLA, SELAGINELLA DENSA, POTENTILLA DIVERSIFOLIA.

Land owner/manager:
HELENA NATIONAL FOREST, HELENA RANGER DISTRICT
PRIVATELY OWNED LAND (INDIVIDUAL OR CORPORATE)

Comments:
VOUCHERS-LACKSCHEWITZ, K. (6574), 1976, MONTU; WATSON, T.J., (1244), 1976?, MONTU. SCHASSBERGER, L.A. (380), 1990; ANNOTATED D. WILKEN (?). SPECIMENS NEED VERIFICATION.

Information source:
SCHASSBERGER, L.A. MONTANA NATURAL HERITAGE PROGRAM, 1515 EAST 6TH AVENUE, HELENA, MT 59620.

Occurrence number: 005

Global rank: G4T2Q Forest Service status: WATCH LIST
State rank: S2 Federal Status: 3C

Survey site name: LEWIS & CLARK PASS
EO rank:
EO rank comments:

County: LEWIS AND CLARK

USGS quadrangle: BLOWOUT MOUNTAIN

Township-range: 016N007W Section: 13 Precision: M
Township-range comments: NE4

Survey date: 1968-06-16 Elevation: 6200
First observation: 1968 Slope/aspect:
Last observation: 1976- Size (acres): 0

Location:
LEWIS & CLARK PASS (ON E SIDE OF ALICE CREEK BASIN, CA. 0.5 MI N OF GREEN MOUNTAIN).

Element occurrence data:
UNKNOWN; ON BORDER OF WATERSHED 10030102.

General site description:
DRY SW SLOPE, 5700' (LACKSCHEWITZ 384); BARE WINDSWEPT HABITAT WITH KRUMMHOLZ, 6700' (WATSON 1270).

Land owner/manager:
HELENA NATIONAL FOREST, LINCOLN RANGER DISTRICT

Comments:
VOUCHERS - LACKSCHEWITZ, K.H. (384), 1968, MONTU; WATSON, T.J. (1270), 1976?, MONTU.

Information source:
LESICA, P., AND S. MOLINA. 1985. AN INVENTORY OF SIGNIFICANT BOTANICAL FEATURES ALONG MT RIVERS. PNW RIVERS STUDY. 54 PP.

ELEMENT OCCURRENCE RECORD
Phlox kelseyi var. missoulensis

Occurrence number: 006

Global rank: G4T2Q Forest Service status: WATCH LIST
State rank: S2 Federal Status: 3C

Survey site name: KINGS HILL
EO rank: C
EO rank comments: LARGE POPULATION IN GOOD CONDITION; HABITAT NOT PRISTINE.

County: MEAGHER
JUDITH BASIN

USGS quadrangle: KINGS HILL

Township-range: 012N008E Section: 02 Precision: S
Township-range comments: NW4,W2NE4

Survey date: 1990-06-26 Elevation: 7800
First observation: 1948 Slope/aspect:
Last observation: 1990-06-26 Size (acres): 40

Location:
LITTLE BELT MOUNTAINS; FROM THE TOP OF KINGS HILL (HWY 89), TAKE FS ROAD SOUTHEAST CA. 0.75 MILE; POPULATION IS ON SCREE SLOPE ABOVE ROAD AND EXTENDING INTO MEADOWS ABOVE.

Element occurrence data:
26 JUNE 1990: HUNDREDS OF INDIVIDUALS, 95% IN FLOWER.

General site description:
SUBALPINE, COMMON ON SCREE SLOPE AND IN MEADOWS ABOVE, WITH LOMATIUM COUS, MERTENSIA VIRIDIS, CERASTIUM ARVENSE, ANTENNARIA UMBRINELLA, BESSEYA WYOMINGENSIS, DODECATHEON CONJUGENS. FORESTS NEARBY OF PINUS FLEXILIS.

Land owner/manager:
LEWIS & CLARK NATIONAL FOREST, KINGS HILL RANGER DISTRICT
LEWIS & CLARK NATIONAL FOREST, JUDITH RANGER DISTRICT

Comments:
VOUCHER - ROSE, F.H. (4082), 1948, MONTU; SCHASSBERGER, L.A. (382), 1990. STATE ENDEMIC. BORDERS WATERSHED 10040103.

Information source:
SCHASSBERGER, L.A. MONTANA NATURAL HERITAGE PROGRAM, 1515 EAST 6TH AVE., HELENA, MT 59620.

ELEMENT OCCURRENCE RECORD
Phlox kelseyi var. missoulensis

Occurrence number: 007

Global rank: G4T2Q Forest Service status: WATCH LIST
State rank: S2 Federal Status: 3C

Survey site name: HARLEY PARK
EO rank: A
EO rank comments:

County: MEAGHER
CASCADE

USGS quadrangle: BELT PARK BUTTE

Township-range: 014N007E Section: 32 Precision: S
Township-range comments: SE4

Survey date: 1990-06-27 Elevation: 7720
First observation: 1945 Slope/aspect: 3-15% - SW TO LEVEL
Last observation: 1990-06-27 Size (acres): 25

Location:
LITTLE BELT MOUNTAIN, HARLEY PARK, CA. 6 MILES WEST OF NEIHART.

Element occurrence data:
13 JULY 1945: "COROLLAS PALE BLUE OR WHITE, PLANT VERY GLANDULAR." 27 JUNE 1990: HUNDREDS OF PLANTS PRESENT, 80% IN FLOWER.

General site description:
ON KNOLL, WITH ACHILLEA MILLEFOLIUM, AGROPYRON SPICATUM, ALLIUM CERNUUM, ANEMONE CYLINDRICA, PENSTEMON PROCERUS, SEDUM STENOPETALUM, TOWNSENDIA PARRYI, ARENARIA CONGESTA, AND ASTRAGALUS VEXILLIFLEXUS.

Land owner/manager:
TENDERFOOT EXPERIMENTAL FOREST
LEWIS & CLARK NATIONAL FOREST, KINGS HILL RANGER DISTRICT

Comments:
VOUCHER - HITCHCOCK & MUHLICK (12311), 1945, SPECIMEN # 203312, RM. SPECIMEN VERIFIED BY WHERRY (1948). SCHASSBERGER, L.A. (388), 1990, WITH DIANE PAVEK. SITE NEAR BORDER OF WATERSHED 10030105. ADDITIONAL ASSOCIATED SPECIES ON FILE AT MONTANA NATURAL HERITAGE PROGRAM.

Information source:
PHILLIPS, H.W., WITH DANA FIELD, LEWIS & CLARK NATIONAL FOREST, P.O. BOX 871, GREAT FALLS, MT 59403.

ELEMENT OCCURRENCE RECORD
Phlox kelseyi var. missoulensis

Occurrence number: 008

Global rank: G4T2Q Forest Service status: WATCH LIST
State rank: S2 Federal Status: 3C

Survey site name: MANLEY RANCH
EO rank:
EO rank comments:

County: POWELL

USGS quadrangle: CHIMNEY LAKES

Township-range: 012N012W Section: 14 Precision: M
Township-range comments: SE4

Survey date:
First observation: 1986
Last observation: 1986-06-01

Elevation: 4500
Slope/aspect:
Size (acres): 0

Location:
OFF HIGHWAY 271 FROM HELMVILLE TO DRUMMOND, ON BOTH SIDES OF THE HIGHWAY.

Element occurrence data:
EXTENSIVE OCCURRENCES.

General site description:
IN OVERGRAZED PASTURES, WITH GILIA SPICATA AND ASTER SCOPULORUM.

Land owner/manager:
PRIVATELY OWNED LAND (INDIVIDUAL OR CORPORATE)

Comments:
NONE.

Information source:
LACKSCHEWITZ, K.H. (10861). 1986. MONTU.

Phlox kelseyi var. missoulensis

Occurrence number: 009

Global rank: G4T2Q Forest Service status: WATCH LIST
State rank: S2 Federal Status: 3C

Survey site name: UPPER WILSON PARK
EO rank: C
EO rank comments: EDGE OF CLEARCUT AREA; SOME CATTLE GRAZING.

County: CASCADE

USGS quadrangle: BUBBLING SPRINGS
BELT PARK BUTTE

Township-range: 014N007E Section: 20 Precision: S
Township-range comments: NW4SW4,SW4NW4,19NE4SE4

Survey date: 1990-06-27 Elevation: 7400
First observation: 1990 Slope/aspect: 3-15% / SOUTHEAST
Last observation: 1990-06-27 Size (acres): 12

Location:
LITTLE BELT MOUNTAINS; FROM HWY 89 JUST NORTH OF KINGS HILL PASS, TAKE FS ROAD #839 NORTHWEST CA. 12 MILES. SITE IS 0.5 MILE NORTH OF DRY PARK.

Element occurrence data:
26 JUNE 1990: CA. 500-1,000 PLANTS, 95% IN FLOWER.

General site description:
ALONG THE TOP OF A SOUTHEAST-FACING RIDGELINE, IN LOAMY SOIL, WITH FESTUCA SCABRELLA, F. IDAHOENSIS, CLAYTONIA LANCEOLATA VAR. FLAVA, POLYGONUM BISTORTOIDES, DODECATHEON PULCHELLUM, THLASPI PARVIFLORUM, CERASTIUM ARVENSE, BESSEYA WYOMINGENSIS, AND GEUM TRIFLORUM.

Land owner/manager:
LEWIS & CLARK NATIONAL FOREST, KINGS HILL RANGER DISTRICT

Comments:
ECODATA PLOT #152690L002 CONTAINS ADDITIONAL ASSOCIATED SPECIES (ON FILE AT MTNHP). SITE BORDERS WATERSHED 10030105.

Information source:
SCHASSBERGER, L.A. MONTANA NATURAL HERITAGE PROGRAM, 1515 EAST 6TH AVE., HELENA, MT 59620.

ELEMENT OCCURRENCE RECORD
Phlox kelseyi var. missoulensis

Occurrence number: 010

Global rank: G4T2Q Forest Service status: WATCH LIST
State rank: S2 Federal Status: 3C

Survey site name: GEORGETOWN LAKE RIDGE
EO rank: B
EO rank comments: LARGE POPULATION IN GOOD CONDITION, NEXT TO ROADWAY.

County: GRANITE

USGS quadrangle: GEORGETOWN LAKE

Township-range: 005N014W Section: 22 Precision: S
Township-range comments: SW4NW4,NE4NW4,NW4SW4,SW4SW4,21E2SE4,27NW4,15NE4SE4

Survey date: 1990-06-14 Elevation: 6800
First observation: 1990 Slope/aspect:
Last observation: 1990-06-14 Size (acres): 80

Location:
FROM HWY 1 AT THE NORTH END OF GEORGETOWN LAKE, TAKE FS ROAD #406 SOUTHWEST CA. 3 MILES. SITES ARE ON EITHER SIDE OF THE ROAD ALONG THE RIDGE.

Element occurrence data:
14 JUNE 1990: CA. 10,000 CLUMPS, 75% IN FLOWER.

General site description:
ALONG WINDSWEPT RIDGE ON ROCKY OUTCROP (SPOKANE AND NEWLAND FORMATIONS) AND IN OPEN MEADOWS, WITH ERIOGONUM OVALIFOLIUM, ERIGERON COMPOSITUS, DODECATHEON PULCHELLUM, GEUM TRIFLORUM, AND POTENTILLA DIVERSIFOLIA.

Land owner/manager:
DEERLODGE NATIONAL FOREST, PHILIPSBURG RANGER DISTRICT
PRIVATELY OWNED LAND (INDIVIDUAL OR CORPORATE)

Comments:
VOUCHER - SCHASSBERGER, L.A. (371), 1990. SPECIMEN REVIEWED BY DR. DIETER WILKEN (CSU)--COULD NOT IDENTIFY.

Information source:
SCHASSBERGER, L.A. MONTANA NATURAL HERITAGE PROGRAM, 1515 EAST 6TH AVENUE, HELENA, MT 59620.

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